

State of Hawaii Public Utilities Commission
Energy Efficiency Portfolio Standard (EEPS)
Technical Working Group (TWG)

Meeting Summary

November 30, 2021

1:00 p.m. to 2:15 p.m. Hawaii Time

Zoom Conference

1:00 – Opening and Welcome

- The EEM welcomed the attendees (~38) and advised them that the meeting was being recorded and requested that they mute their lines if they weren't speaking

- Commissioner Potter thanked the attendees for their participation and gave the following remarks:
 - Today's meeting is an excellent way to level-set and start thinking about what energy efficiency is going to look like in the "roaring '20s". We have an EEPS goal of 4,300 GWh by 2030 but that's not the end game because we have the capacity to hit a higher target.
 - Climate change is a critical issue and energy efficiency is one of the mechanisms we have not only to achieve savings but to address social and environmental inequity. What we are doing is providing a service to reduce customers' energy burden. Energy efficiency allows us to engage with the community in a way that others are not able to do to address financial and other barriers; we have the ability to think about it differently.
 - We've been talking about the potential for IDSM to address multiple goals, policy objectives, and needs. That's remarkable and energy efficiency is the gateway to get into people's homes and reduce capacity during peak periods or promote time-dependent consumption. Marrying those two leads to types of end uses that provide more than one service to the consumer and the grid. When we transition away from thinking about GWh and looking at the broader set of policy and global objectives, then EE is a mechanism we can use to not only get this conversation started but to get projects and programs implemented and be leaders in the space.
 - How can we do this in a comprehensive and circular fashion? We talked last year about introducing metrics for GHG and time variant capacity reductions. I encourage you to think about those again because we have a whole host of problems that we are trying to tackle and EE is a solution that is least invasive here in Hawaii. Leveraging energy efficiency to right size load is important as we look at the electrification of transportation; need to think of ways to merge those two things as well. Not just energy efficiency savings but electric vehicle load expansion. How are we going to manage that over the next decade?
 - I encourage the best and brightest minds gathered here today to think in ways that are innovative about the savings we can achieve over the next 9 years and

what can we include that will help us advance our goals here in Hawaii and do it in a comprehensive way to address overlapping goals.

1:05 – Agenda

- The EEM provided the TWG purpose, the meeting objective and reviewed the agenda:
 - The TWG purpose is to represent both Commission regulated and non-regulated entities in EEPS-related matters, including making recommendations regarding prioritizing savings strategies for the portfolio, determining eligible measures and programs, and revising the EEPS goals, as necessary.
 - Today's meeting objective is to recap the past work around EEPS metrics revisions in order to queue up a more in-depth conversation after the first of the year.

1:10 – EEPS Overview

- The EEM team provided an overview of the EEPS Framework:
 - In January 2008, Hawaii and DOE signed a memorandum of understanding to establish a long-term partnership, Hawaii Clean Energy Initiative (HCEI), with the purpose of transforming the way renewable energy and energy efficiency resources are planned and used in the state. This was largely in response to rapidly increasing costs of fossil fuel imports that powered much of Hawaii's economy.
 - The HCEI led to an "Energy Agreement" between the Governor's Office, DBEDT, Consumer Advocate, and the HECO Companies to move the state away from dependence on fossil fuel for electricity and ground transportation in favor of indigenously produced renewable energy and an ethic of EE.
 - 70% clean by 2030 – 30% energy efficiency, 40% renewable energy (now 100% by 2045).
 - "[i]t is the goal of all parties to ensure that Hawaii achieves the maximum possible levels of energy efficiency as it represents the most effective use of resources possible, including Conservation by not using resources at all. "
 - This Agreement led to Act 155 which led to the establishment of EEPS law - HRS 269-96 in 2009.
 - The EEPS law stipulated:
 - Pursuant to HRS § 269-96(a), the Commission shall establish EEPS that will maximize cost-effective energy efficiency programs and technologies.
 - That the HPUC is lead for development and maintaining the EEPS program.
 - Purpose: "...maximize cost-effective energy-efficiency programs and technologies to achieve electricity-use reductions to the maximum extent feasible by establishing an energy efficiency portfolio standard."
 - HPUC instituted proceeding 2010-0037 and worked with the TWG (the intervening parties) to flesh out the EEPS Framework during 2010-2011.

- In January 2012, EEPS Framework adopted with the D&O 30089 set out the procedures and guidance for implementing the EEPS.
- The Framework identified three different methods of calculating interim and final goal and what factors such as sales of electricity for electrification of transportation would not be included. But in 2020, the Commission clarified with the TWG that the goal would be calculated as the cumulative persisting savings occurring in 2030, and not a simple summation of annual and five year first year energy savings goals.
- Roles and responsibilities:
 - Commission: responsible for EEPS, review/adjust EEPS Goals and Framework, overarching EEPS EM&V, may help contributing entities' EM&V;
 - EEPS Technical Working Group (TWG): steering committee of members, make recommendations to Commission, identify contributing entities, recommend EM&V; and
 - Contributing Entities: implement programs or activities designed to produce EE savings that contribute to EEPS, submit reports and EM&V:
 - § Regulated Entities (PBFA and utilities)
 - § Non-Regulated Entities
- Strategies for meeting EEPS: resource acquisition, market transformation, and EEPS portfolio approach (portfolio is cost effective but can include individual elements that are not cost effective)
- Delivery channels: regulated entities, non-regulated entities, and coordinated programs involving multiple contributors.
- Eligible measures and approaches:
 - External factors do not count;
 - Customer-sites, grid-connected renewable energy systems count toward RPS beginning January 1, 2015:
 - Solar hot water heating and seawater cooling do count for EEPS;
 - TWG to develop/maintain list of eligible measures:
 - This is the Technical Reference Manual;
 - Updated energy efficiency potential study.

1:20 – Market Potential Study

- AEG presented an overview of the 2020 Potential Study elements relevant to EEPS:
 - The EEPS target appears to be attainable under the achievable business-as-usual (BAU) scenario
 - Based on 2019 analysis which assumes similar levels of spending and savings; and
 - Does not include any COVID implications i.e. supply constraints.
 - There is substantial amount of additional cost-effective savings – economic potential – available through 2030.
 - The commercial sector is expected to contribute more savings than residential:

- By 2030, the residential sector is expected to achieve between 549 GWh and 770 GWh; and
 - Cooling, water heating, and lighting measures account for the majority of savings.
 - By 2030, the commercial sector is expected to achieve between 780 GWh and 986 GWh:
 - Substantial savings come from lighting measures followed by cooling.
 - In terms of hourly impacts:
 - EE shows substantial potential for overall reduction on peak days;
 - DR/GS shows high potential during the peak period for residential; and
 - Rates show the highest ability to target peak periods (these impacts used may not be reflective of Hawaii response to programs).
 - Areas for improving or updating the EEPS metric:
 - With the total achievable siting at about 5,000 GWh, is the overall 4,300 GWh goal at the right level?
 - Other metrics that might also be appropriate for Hawaii:
 - Time Dependent MW goal(s) that better align with capacity issues and grid needs; and
 - GHG and/or Carbon metrics that align with zero emission goals for the State.
 - Additional metrics should:
 - Align with the IGP and could vary by island in terms of defining peak and capacity resource requirements;
 - Include carbon or GHG factors that are specific to Hawaii's generation mix and vary by time of day and season:
 - As generation mix changes, GHG changes;
 - Because Hawaii is so unique, any changes around rates, etc. should be supported by Hawaii specific studies that can be used to quantify potential, i.e., time of day pilots, peak impacts, demand response impacts.
- Questions:
 - *A participant asked a question about whether Codes & Standards (C&S) was in baseline or forecast of savings:

 - *AEG responded that in the graphic, the previous C&S are the gray bar - past and future impacts of existing C&S. Looking at potential, BAU is looking at programmatic potential but the pie includes everything. They didn't do separate forecast of C&S that haven't happened yet. If there is a new lighting standard, that lighting potential in programs doesn't go away, it shifts into the baseline. All potential is there regardless of how it is achieved.**
 - *A participant made an observation that time of day seems more short-term an issue given the likelihood that grid needs may shift. Is it useful to track percent of load that is interactive.*

- *A HECO participant observed that the rates portion was not Hawaii specific and that some of the potential identified as DR might be a response to a rate. Can you truly stack them or are we overcounting the rate?*
 - *AEG responded that AEG tried to account for interactive effects. When looking at true DR, they were modeled as grid service scenarios. They are separate from rate impacts. Believe they were modeled as rate impact only - not a rate impact and an enabling technology leveraging a switch or technology. Have to be careful stacking things. Not sure how well we took into account impacts of increasing levels of EE and DR - as you increase your EE, you decrease the potential available for DR - but we did our best to account for those interactive effects.*

1:30 - GEBS Hawaii Working Group Update

- The Hawaii Public Utilities Commission and the Hawaii State Energy Office presented an overview of the grid-interactive efficient buildings working group:
 - Several on call are on the working group or aware of GEBS.
 - Defining features are of GEBS efficient buildings with connectivity to a communication technology as well as smart devices or implementation of smart technologies and looking to provide flexible load.
 - There's an effort at the national level in research and policy:
 - Partnerships of NASEO-NARUC; NREL, PNNL and LBNL and others not mentioned. Efforts did produce a GEBS Roadmap - guidance elements and 14 recommendations.
 - In Hawaii, there is a working group over the last year and a half:
 - Involves other stakeholders including the utilities and several counties and the goal is to develop a pilot or demonstration; and
 - In short term, they are working with PNNL on a technical brief with guidance on pilots. That document will be ready to be shared in the early part of 2022.
 - In addition to contributing to the technical brief,
 - Pilots - Hawaii DOE School and CCSR focusing on resilient community hubs;
 - Benchmarking - building on previous work. State Benchmarking project and HRS196-30;
 - Energy Code Updates - 2018 ICC adopted at state level, 2021 Zero Code, and 2024 IECC Grid Integration ; and
 - Technical Assistance - discussion with PNNL and NEEA - on code proposals for 2021 IECC. Assessing cost, benefits and savings as we look at the 2021 IECC amendments.
 - There are a number of events in December:
 - NASEO-NARUC GEB Working Group Virtual Forum – December 2nd
 - Net-Zero Energy Residential Design Webinar – December 2nd, Noon-1:30
 - 2018 IECC Compliance Webinar – December 9th, Noon-1:30

1:35 – Update on the IGP Process

- HECO presented an update of the Integrated Grid Planning work and how they are modeling energy efficiency in the grid planning process:
 - The first way they are modeling energy efficiency is in load forecasts:
 - Data provided by AEG from the 2020 State Market Potential Study (MPS):
 - Base Forecast: business as usual and codes & standards
 - Low Forecast: business as usual
 - High Forecast: achievable high and codes & standards
 - Freeze Forecast: base forecast frozen at 2021
 - Way they are using forecasts:
 - Low and high are incorporated into high and low load book ends;
 - Freeze forecast used in two ways:
 - First is energy efficiency freeze sensitivity to look at value of having a base level energy efficiency uptake; and
 - Energy efficiency supply curves.
 - Load forecast in IGP: A range of low load, high load bookends are being modeled in IGP consistent with the IGP Technical Advisory Panel feedback to test the sensitivity of the models and resulting portfolios against a wide range of load forecasts.
 - Did also model some additional forecasts that looked at different levels of adoption of technologies, but shifted to using high and low load bookend approach.
 - Energy efficiency supply curves:
 - Supply Curves were developed by AEG using MPS data:
 - Uses the achievable technical potential which is a subset of the technical potential, assuming customer participation rates from the future achievable – high case.
 - The supply curves will be modeled as part of EE Freeze scenario in IGP:
 - Allows the model to assess which incremental EE bundle is cost effective, above what is currently installed; and
 - Results of the EE Freeze scenario can inform whether the base forecast for EE should be modified to include the additional amount of energy efficiency that was found to be cost effective.
 - Other ways that the MPS to inform supply curves:
 - For Oahu, the incremental savings for each bundle. Used the b/c ratio to inform the curves that were cost effective, borderline cost effective and not cost effective; and
 - Look at the shape of measures and whether they were flat or peak. Using those factors came up with eight resource options to model. And measures in each resource option.
- Questions:
 - *The EEM team asked for clarity on how HECO will use forecast to optimize resource selection and quantity and timing of each resource.*

- *HECO responded that when they model low bookend versus base case and high bookend, they look at whether it is the same set of resources being installed but at different time frames or a different set of resources. Through these bookends and the types of resources we are seeing selected and whether there are any adjustments we need to make as part of base case. WE will share with IGP working group.*
- *A participant from the Hawai'i State Energy Office commented that the Appliance Standards Awareness Project (ASAP) presented a webinar this morning stating that the Biden Administration would aggressively pursue updating appliance efficiencies in 2022.*

1:45 – EEPS Metrics Update Recap

- The EEM team presented a recap of the EEPS metrics update discussions that have previously occurred:
 - This conversation picks up where AEG's presentation left off.
 - There's been a rapidly evolving policy landscape in Hawaii over the last 10 to 15 years and since 2009 and even 2012 there have been a lot of changes:
 - Covid impacts
 - Customer-sited DERS
 - Variable generation in utility mix (more solar and wind)
 - Customer side technologies and increasing onboard technology creates new opportunities for grid resilience
 - EEPS has an important role to save any-time energy but do we want to evolve EEPS to capture energy optimization, carbon neutrality, resilience.
 - EEPS was designed for flexibility. Anticipated need for EEPS to evolve and built in requirements for periodic review and modifications
 - Commission has the authority and TWG is a key participant for providing input and advice.
 - Reminded us of the evolution of the conversations of the EEPS metrics that have transpired since September 2017 TWG meeting where there was a "Hopes & Dreams" brainstorming.
 - By February 2019 we had collectively simplified this list to four key metrics that might be integrated into a future EEPS update.
 - Cumulative persisting energy savings (kWh) [Clarified for EEPS]
 - Cumulative persisting peak demand reduction (kW)
 - Avoided generation fuel consumption (barrels of fuel oil)
 - Emissions reductions (tons CO₂e)
 - As things evolved, however, it seemed more practical to make progress first by applying the four metrics to the statewide tracking without officially making them part of EEPS. PBFA was already tracking these metrics to some extent. The idea was to formalize how these metrics were defined and calculated and in particular to leverage hourly data on these metrics as it became available from IGP model development by HECO. Then came COVID and that put the brakes on the TWG activity around metrics, which brings us to where we are today.

- As we restart the discussion, we wanted to make note of the fact that the EEPS as currently structured is about "anytime, anywhere" efficiency impacts that are present in 2030, with no consideration for what time of day, what time of year, and where in the State they occur.
 - As AEG mentioned earlier in the meeting, the MPS findings make it clear that there is sufficient potential for the PBFA and other contributing entities to deliver more savings than set in the EEPS goal. So the current EEPS goal seems achievable. Thus adjustments do not appear necessary for the purposes of calibrating the goal with the potential.
 - However, Hawaii policies and the grid realities have changed materially since 2011, when the EEPS framework was established and 2009 when the EEPS law was passed. The questions the TWG started asking in the Hopes and Dreams conversation as far back as 2017 relating to Energy Optimization are increasingly central to Hawaii Policy and grid planning and may indicate that some additional evaluation of the EEPS program is appropriate.
 - The Commission has actively supported increased development of Energy Optimization elements of the PBF portfolio.
 - We're about to have access to greatly increased data granularity in the form of hourly and location avoided costs and carbon intensity. This increased "when and where" data dramatically increases the evaluation of and potential opportunities from a variety of energy optimization measures to support grid stability and optimization of investments in renewable energy supply to help achieve the RPS goals and carbon reduction in the meantime.
 - So the question is, what new metrics would be most appropriate for measuring and tracking energy optimization impacts, if it was decided that EEPS should not be constrained to its original "anytime, anywhere" metric.
 - Starting from where we left off the discussion in early 2020, the EEM wanted to share some new developments from other jurisdictions.
- The EEM shared two EE metrics being used in other jurisdictions. Emphasizing that these are not recommendations from the EEM but rather information to support consideration and discussion.
 - California Public Utilities Commission Total System Benefit:
 - Information previously presented in the October TAG meeting;
 - The CPUC adopted TSB in May this year but it won't become the official metric until 2024;
 - TSB is intended to be a single metric that will replace both the current energy and peak demand goals;
 - It's expressed in dollars and is the sum of the benefits reduced by the sum of increased supply costs;
 - The benefits portion of the calculation is the sum of the measure's avoided costs which captures the time and locational value of savings, GHG benefits, and lifecycle savings; and

- Therefore, TSB captures all of the benefits and policy goals of energy efficiency and gives the program administrators a single goal to optimize around.
 - Sacramento Municipal Utilities District Avoided Carbon Metric:
 - It was adopted by SMUD's board back in 2020 which makes them the first utility in the country to use avoided carbon as a metric;
 - It is intended to allow their energy efficiency programs to focus investments on those that reduce carbon emissions and clear the way for expanded investments in building electrification alongside traditional efficiency approaches. It's basically rebranding electrification as energy efficiency;
 - Each year SMUD will calculate a carbon equivalence to convert therms to kWh to determine the carbon intensity of their electricity and gas. In 2020 it was 24 kWh/therm and it will increase as the RPS increases so they estimate at 90% RPS it will be ~138kWh/therm:
 - Value is specific to SMUD's grid and their long-run forecast of emissions;
 - Avoided carbon only - ignores refrigerants, GHG and methane; and
 - Since the carbon content of electricity is temporal, there is a big emphasis on when they save electricity.
- Questions:
 - *Question: Conventionally our work has not included the gas company. What is the potential timeline for having that data integrated?*
 - *Response: The gas company IRP process is separate from the electric system IGP. The HPUC has expressed an intent to open a proceeding for the gas company's IRP but that isn't underway yet.*

2:05: Next Steps/Wrap Up

- The EEM wrapped up the meeting:
 - Intend to build on the discussion in this meeting in a more in-depth conversation about EEPS metrics revisions after the first of the year.
 - Expect a meeting announcement and draft agenda sometime in December.
 - If you have any thoughts or questions about EEPS metrics revisions that you'd like to share in the meantime, feel free to reach out to the EEM.
 - The meeting recording and summary will be posted on the HawaiiEEPS.org website.
 - The EEM thanked all the participants, Commissioner Potter, and the presenters.